

CLAIM AMENDMENTS

1 - 17. (Cancelled).

18. (Original) In a system for monitoring hand cleaning activity, the combination comprising:

a plurality of hand cleaning agent dispensers, each dispenser having a housing and a unique identifier identifying that dispenser and distinguishing it from the others of said dispensers, and each dispenser having means for storing hand cleaning agent, and each dispenser having a port for filling the means for storing, and each dispenser having means operable, when actuated, to cause a dispensing event to dispense hand cleaning agent from said dispenser;

a signal processor;

a control station operable with said dispensers to receive said dispensers upon return to the control station by the users of the dispensers, re-fill said returned dispensers with said hand cleaning agent, and release said re-filled dispensers to users, said control station having:

means coupled to said processor for reading and recording the dispenser identifier after return and admission of a dispenser to the control station;

means for re-filling a dispenser with said agent; and

means for reading a dispenser identifier and coupled to said processor for recording the amount of said agent used to re-fill the dispenser and recording the release of the re-filled dispenser from the control station.

19. (Original) The combination of claim 18 and wherein said control station further comprises:

means for recording in said processor the date and time that the control station admits a

returned dispenser; and

means for recording in said processor the date and time that said re-filled dispenser is released from the control station.

20. (Original) The combination of claim 19 and wherein:

said control station has a user identifier recognition device co-operable with a user's identifier and with said dispenser identifier and with the means for recording date and time, and coupled to said processor to relate a dispenser to a user and the date and time of release and the date and time of return of the dispenser, in a record; and

said control station has agent quantity measuring means operable with said dispensers individually and coupled to said processor to measure the quantity of said hand cleaning agent used in filling an individual dispenser.

21. (Original) The combination of claim 18 and wherein:

said dispensers are portable, sized to be held in a hand, with the actuator operable by a part of the holding hand.

22. (Original) The combination of claim 18 and wherein:

said dispensers are adapted to attachment to a health care worker and display outside the worker's clothes.

23. (Original) The combination of claim 18 and wherein:

said control station comprises said processor, a user input station, a dispenser check-in

station and a dispenser check-out station, said user input station being coupled to said check-out station and to said check-in station for enabling users to check-out and check-in said dispensers.

24. (Original) The combination of claim 23 and wherein:

said dispensers have a front end and a back end; and

said control station has a front and a back with the dispenser check-in station and check-out station of the control station being at the front of the control station, and adapted to receive the dispensers, front-end first at the check-in station and release said dispensers, rear end first, at said check-out station.

25. (Original) The combination of claim 23 and wherein:

said dispenser check-in station is located above said check-out station for promoting passage of dispensers from the check in station to the check-out station by gravity.

26. (Original) The combination of claim 23 and wherein:

said check-out station includes a dispenser filler to fill said dispensers individually with hand cleaning agents.

27. (Original) The combination of claim 26 and wherein:

said check-out station is so-coupled to said user input station to enable said filler to fill a dispenser upon recognition of the identifier of a user checking-out the dispenser and then fill with the agent specified by the checking-out user, and then store in said processor's memory, information identifying the checking-out user, and identifying the dispenser, and identifying the

specified fill agent, and the quantity of agent required to fill the dispenser, and the identification of the previous user of the dispenser, and the time and date of check-out of the dispenser to the checking-out user.

28. (Original) The combination of claim 26 and wherein:

said filler includes a fluid flow electronic reader coupled to said processor to store data representing the quantity of agent required to re-fill a dispenser.

29. (Original) The combination of claim 26 and wherein:

the control station includes a dispenser weighing device to weigh the dispenser after filling, said weighing device being coupled to said processor to store data representing the quantity of agent required to re-fill a dispenser.

30. (Original) The combination of claim 29 and wherein:

the dispenser weighing device is located at the check-in station and is adapted to weigh the dispenser before re-filling.

31. (Original) The combination of claim 26 and wherein said dispenser filler

comprises:

a fluid injection head for coupling to the said port of a dispenser.

32. (Original) The combination of claim 31 and wherein said check-out station

includes:

a holder with said fluid injection head mounted on the holder, the holder being movable from an idle position to a dispenser filling position to a dispenser ejection position;

a series of holder position sensors, one for sensing holder idle position, one for sensing dispenser filling position and one for sensing dispenser ejection position; and

powered means operable when activated, to drive said holder from said idle position to said dispenser filling position to couple said injection head to a dispenser port, and to drive said holder from said filling position to said ejection position to eject a dispenser from its location after it was being filled.

33. (Original) The combination of claim 32 and wherein said injection head further comprises:

a fluid filling pin and seal means receivable in said port of a dispenser; and

means for biasing said pin into a rest position in said head, said pin being movable away from said rest position and against the urging of said biasing means upon coupling said head to said dispenser and for engagement with a pin-position sensor coupled to said powered means to de-activate said powered means when said filling pin is sealed to said dispenser port.

34. (Original) The combination of claim 33 and wherein:

the dispenser filler further comprises a refill pump coupled to said filling pin; and

said powered means and said dispenser filler are coupled to said pin position sensor to de-activate said powered drive means and activate said refill pump when said pin position sensor is operated.

35. (Original) The combination of claim 34 and wherein:

said holder is a carriage; and

said powered means is a carriage linear drive screw coupled to said carriage.

36. (Original) The combination of claim 34 and wherein the dispenser filler further comprises:

a pressure sensor coupled to said refill pump to de-active said pump in response to achievement of a pre-selected pressure.

37. (Original) The combination of claim 34 and wherein the dispenser filler further comprises:

a fluid flow reader coupled to said injection head and to said processor to read and record the amount of fluid received from said refill pump.

38. (Original) The combination of claim 23 and wherein said user input station comprises:

a user operable keypad coupled to said processor for user entry of data;

a user identifier reader coupled to said processor; and

a data display coupled to said processor.

39. (Original) The combination of claim 18 and further comprising:

transport guide means on said control station; and

guide follower means on said dispensers;

said guide follower means cooperating with said transport guide means and thereby aligning said dispensers for stacking in said control station and controlling travel from the check-in station to the check-out station.

40. (Original) The combination of claim 39 and wherein:

each of said dispensers has a guide receiver hole therein;

said dispensers are stacked in a stack in said control station;

a transport control rod in said control station is received through said holes in said stacked dispensers, said rod being vertically reciprocable between a dispenser admission inhibiting position and a dispenser release inhibiting position.

41. (Original) The combination of claim 40 and wherein said control station further comprises:

a dispenser return slot to receive dispensers from which hand cleaning agent has been dispensed; and

an alignment ramp down from said return slot toward the top of the stack to receive a returned dispenser and orient it for reception of the top of the transport control rod in the guide receiver hole in the returned dispenser.

42. (Original) The combination of claim 39 and wherein:

said dispensers in said control station are stacked in direct contact of each dispenser in the stack with the dispenser immediately above it in the stack.

43. (Original) In a system for monitoring hand cleaning activity, the combination comprising:

a plurality of hand cleaning dispensers, each dispenser having a housing and means for storing hand cleaning agent, and a port for filling the means for storing, and having means operable, when actuated, to cause a dispensing event to dispense the hand cleaning agent from the dispenser;

a signal processor;

a control station operable with said dispensers to receive said dispensers upon return to the control station by users of the dispensers, re-fill said dispensers with said hand cleaning agent, and release said re-filled dispensers to users, said control station having means coupled to said processor for recognizing and recording an identifier unique to the user of a dispenser for release of a dispenser from the control station;

means for re-filling said dispenser with said agent; and

means for recognizing the identifier of a user for admitting said dispenser to the control station after use and recording the amount of said agent used to re-fill the dispenser after use.

44. (Original) The combination of claim 43 and wherein:

said control station further comprises means for recording in said processor the date and time that the re-filled dispenser is released from the control station to the user, and means for recording in said processor the date and time that the control station admits said dispenser returned after use by said user.

45. (Original) The combination of claim 43 and wherein:

said means for recognizing an identifier is arranged to preclude admission of a dispenser to the control station unless an identifier is first recognized by the processor.

46. (Original) The combination of claim 43 and wherein:

said control station has agent quantity measuring means operable with said dispenser and coupled to said processor to measure the quantity of said hand cleaning agent used in re-filling said dispenser.

47. (Original) The combination of claim 43 and wherein:

said dispensers are portable, sized to be held in the hand, with the actuator operable by a part of the holding hand.

48 – 53. (Cancelled).

54. (Currently amended) ~~The dispenser of claim 53 and wherein:~~ A hand treatment agent dispenser comprising:

a housing;

a replaceable cartridge for storing the agent;

means on said housing coupled to said cartridge for discharging said agent from said cartridge and out from said dispenser;

said cartridge being replaceable in said housing by another cartridge without tools;

said cartridge being adapted to organization with other like cartridges in a control station for sequential release from such control station; and

the cartridge has an identifier, said identifier being permanent and unique among identifiers for replaceable cartridges for storing hand treatment agents, to distinguish said cartridge from other replaceable cartridges for storing hand treatment agents.

55-56. (Cancelled).

57. (Currently amended) ~~The dispenser of claim 53 and wherein:~~ A hand treatment agent dispenser comprising:

a housing;

a replaceable cartridge for storing the agent;

means on said housing coupled to said cartridge for discharging said agent from said cartridge and out from said dispenser;

said cartridge being replaceable in said housing by another cartridge without tools;

said cartridge being adapted to organization with other like cartridges in a control station for sequential release from such control station; and

said cartridge has multiple agent storage compartments therein.

58. (Original) The dispenser of claim 57 and wherein:

said cartridge has a unique identifier.

59. (Original) The dispenser of claim 57 and wherein:

each compartment of the majority of said compartments has an agent storage cell therein which contains a unit dose of hand cleaning agent and is isolated from each other of said

compartments to avoid contact of the agent in any of said compartments with the agent in any of the other of said compartments.

60. (Original) The dispenser of claim 57 and wherein:
the cartridge is arranged in the housing for movement of said compartments relative to said means for discharging, to enable discharge of said agent from said compartments sequentially.

61. (Original) The dispenser of claim 57 and wherein:
the cartridge has a rotatable platform in which the compartments are arranged in a circle around an axis of rotation to advance the compartments relative to the means for discharging to enable discharge of said agent from said compartments sequentially.

62. (Original) The dispenser of claim 61 and wherein:
the housing has a piercing edge thereon in the path of a portion of each of said cells as the platform is rotated in the housing.

63. (Original) The dispenser of claim 61 and wherein:
the housing has spring means to assist rotation of the platform; and
the housing has means for limiting rotation of said platform in steps.

64. (Original) The dispenser of claim 62 and wherein:
the cartridge has a circular outside wall with an aperture in said wall, said portion of each

of said cells protruding through the aperture in the wall in which the cell is located;

the piercing edge being oriented to pierce said portion when rotationally advanced against the edge to enable dispensing of agent from said cell.

65. (Original) The dispenser of claim 64 and wherein:

the housing has a nozzle at said port,

said outside wall of said cartridge being proximate the port, and the said cell portion being in direct communication with said nozzle when pierced for direct flow from a pierced cell out from the dispenser through said nozzle.

66. (Original) The dispenser of claim 59 and wherein:

said cells are made from an elastomeric material deformable for dispensing agent from a cell in a compartment by external application of force to the cell, but sufficiently resilient to recover from said deformation and close the portion pierced following removal of external force.

67. (Original) The dispenser of claim 61 and wherein:

said means for discharging said agent include an arm with a presser foot, said presser foot having a normally closed position in said housing and received in a vacant compartment in said platform, but releasable to an open position for activation to register with and deform one of said cells in said cartridge to eject hand cleaning agent from said cell.

68. (Original) The dispenser of claim 67 and further comprising:

a spring in said housing and which normally urges said arm and presser foot to open

position; and

a second spring urges said platform in a rotational direction about said axis; and

said foot and said platform have platform advance stops thereon cooperable to control advance of said platform during operation of said arm to place said foot in registry with said cells, one-at-a-time, enabling said arm and foot when the foot is placed in registry with the cell, to eject said agent from said cell as the arm and foot therewith is pressed from said open position to said closed position.

69. (Cancelled).

70. (Currently amended) ~~The dispenser of claim 69 and wherein:~~ A hand treatment agent dispenser comprising:

a housing;

a replaceable cartridge for storing the agent;

means on said housing coupled to said cartridge for discharging said agent from said cartridge and out from said dispenser;

said cartridge being replaceable in said housing by another cartridge without tools;

said cartridge being adapted to organization with other like cartridges in a control station for sequential release from such control station;

a member operable on at least a portion of said cartridge for compression thereof to dispense agent from said cartridge portion;

said cartridge includes multiple compartments, and

said means for discharging includes a presser foot operable by said member in said

compartments one-at-a-time to dispense said agent.

71. (Original) The dispenser of claim 70 and wherein:

portions of said compartments are made of elastic material deformable by said presser foot but self-restorable to self-close apertures in said portions following the dispensing of said agent therefrom.

72. (Original) In a system for monitoring hand cleaning activity, the combination comprising:

a plurality of hand cleaning agent dispensers, each dispenser having means for storing hand cleaning agent, and having means operable, when actuated, to cause a dispensing event to dispense the hand cleaning agent from the dispenser;

a control station having means for storing hand cleaning agent for said dispensers;

means for recognizing an authorized user of said dispensers and enabling said control station to release hand cleaning agent from storage in said station to said authorized user upon request; and

means to record the time and date of release of hand cleaning agent to an authorized user.

73. (Original) The combination of claim 72 and wherein:

said control station means for storing hand cleaning agent includes at least one replaceable hand cleaning agent containing cartridge for said dispensers.

74. (Currently amended) The combination of claim 73 and wherein:

the replaceable cartridge has a unique identifier, said identifier being permanent and unique among identifiers for replaceable cartridges for storing hand treatment agents, to distinguish said cartridge from other replaceable cartridges for storing hand treatment agents .

75. (Original) The combination of claim 73 and wherein:

said replaceable cartridge has multiple agent-containing compartments therein, each of said compartments having said hand cleaning agent therein isolated from hand cleaning agent in each other compartment so that agent in one compartment does not normally communicate with agent in another of said compartments.

76. (Original) The combination of claim 75 and wherein:

said compartments have hand cleaning agent containing cells therein, at least portions which are resilient and compressible by application of external force to eject said agent from said compartments through apertures in said compartments, but having sufficient recovery from depression to re-close said cells following release of external pressure.

77. (Original) The combination of claim 72 and wherein:

said dispensers are refillable, and

said control station is adapted to refill said dispensers and release said dispensers when refilled to authorized users sequentially.

78. (Original) The combination of claim 77 and wherein:

said dispensers having unique identifiers.

79. (Original) The combination of claim 77 and wherein:
said control station means for storing include a fluid reservoir; and
said control station has means for delivering said hand cleaning agent from said reservoir
into said dispensers.

80. (Original) The combination of claim 79 and wherein:
said means for delivering include a pump.

81. (Original) The combination of claim 80 and wherein:
said dispensers are refillable.

82. (Original) The combination of claim 72 and wherein:
said means for storing hand cleaning agent on said dispenser is a replaceable cartridge
containing said hand cleaning agent; and
said control station means for storing said hand cleaning agent is a plurality of said
cartridges for said dispensers.

83. (Original) The combination of claim 82 and wherein:
each replaceable cartridge has a unique identifier.

84. (Original) In a system for monitoring hand cleaning activity, the combination
comprising:
a plurality of hand cleaning agent dispensers, each dispenser having a housing and means

storing hand cleaning agent, and having means operable, when actuated, to cause a dispensing event to dispense the hand cleaning agent from the dispenser;

a control station having means for storing said dispensers; and

means for recognizing an authorized user of said dispensers and enabling said control station to release at least one of said dispensers to said authorized user upon request.

85. (Original) The combination of claim 84 and wherein:

each of said dispensers has a unique identifier.

86. (Original) The combination of claim 84 and further comprising:

means coupled to said means for recognizing, to record the time and date of release of said at least one of said dispensers to an authorized user.

87. (Original) The combination of claim 85 and further comprising:

means coupled to said means for recognizing to record the time and date of release of said at least one of said dispensers to an authorized user.

88. (Original) In a system for monitoring hand cleaning activity, the combination comprising:

a plurality of hand cleaning agent dispensers, each dispenser having means storing hand cleaning agent, and having means operable, when actuated, to cause a dispensing event to dispense the hand cleaning agent from the dispenser;

a control station having means for storing hand cleaning agent for said dispensers, and

having means to release hand cleaning agent from storage in said station to a user upon request, and having means to record an identifier for the release request along with the time and date of release of said hand cleaning agent to the requesting user in response to the request.

89. (Original) The combination of claim 88 and wherein:

said dispensers are refillable, and

said control station is adapted to refill said dispensers and release said dispensers when refilled, with each of the dispensers having the unique identifier recorded by said means to record.

90. (Original) The combination of claim 88 and wherein:

said control station means for storing hand cleaning agent includes at least one replaceable hand cleaning agent containing cartridge for said dispensers; and

said control station is adapted to store a plurality of said cartridges and release said hand cleaning agent upon request in said cartridges, one cartridge per request, each cartridge having a unique identifier recorded by said means to record along with the time and date of release of the cartridge by the control station.